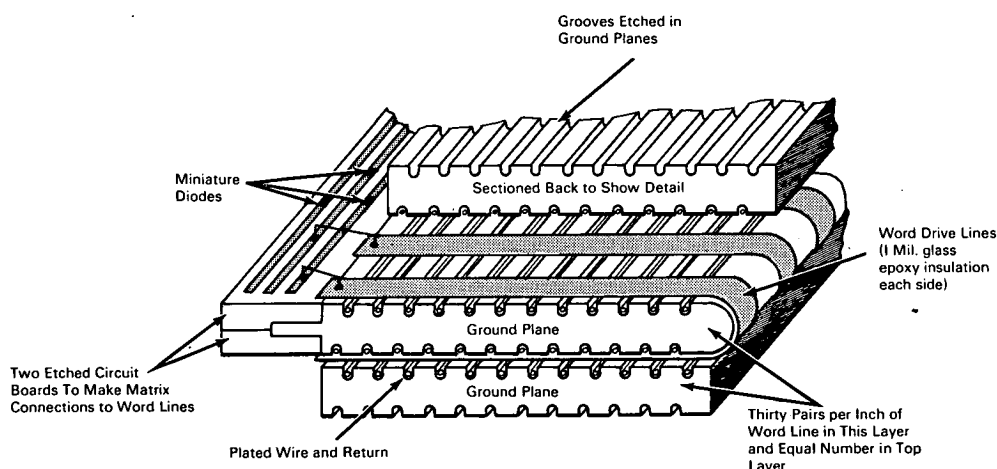


# NASA TECH BRIEF



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## Improved Wire Memory Matrix Uses Very Little Power



**The problem:** To design a compact, rugged memory matrix for computer applications where available power is a limiting factor. Ferrite-core memories draw 10 to 15 watts of average power and, in certain applications, this is intolerable.

**The solution:** A thin-film, plated-wire memory matrix that requires little power yet has higher speed and greater storage capacity than ferrite-core memories of the same size.

**How it's done:** A conducting ground plane of copper, magnesium, or aluminum has grooves etched in it to receive insulated plated wires. The wires are placed in the grooves and are held by a coating of varnish or other suitable material. Etched word lines, each supported between two flexible one-mil glass epoxy dielectric sheets, are wrapped around the ground plane and connected to the matrix connections on etched circuit boards bonded to the ground

plane. Two additional ground planes, with plated wires in etched grooves, are placed on top of and beneath the first ground plane to enable one word line to serve many more bit lines.

### Notes:

1. Placing the plated wire in this coaxial cable type structure reduces its surge impedance.
2. This configuration quadruples the number of bits per inch of word line over previous devices of the same size.

**Patent status:** Title to this invention has been waived under the provisions of the National Aeronautics and Space Act (42 U.S.C. 2457 (f)), to UNIVAC Division of Sperry Rand Corporation, P.O. Box 500, Blue Bell, Pennsylvania.

Source: George A. Fedde of UNIVAC Division of Sperry Rand Corporation under contract to Jet Propulsion Laboratory (JPL-SC-167)  
Category 01